S

Wiley Rein LLP

Gregory L. Masters
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ORIGINAL

2019 JAN 28 PM 2:09

January 2, 2019

BY HAND VIA COURIER

Accepted / Filed

JAN -2 2019

Federal Communications Commission
Office of the Secretary

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
12th Street Lobby, TW-A325
Washington, DC 20554

Re: **Salem Communications Holding Corporation – FRN: 0003760352**
Station WSPZ(AM), Washington, DC (Fac. ID 8681)
Application for Direct Measurement of Power

Dear Ms. Dortch:

On behalf of Salem Communications Holding Corporation, licensee of AM station WSPZ, Washington, DC, we are submitting herewith an original and two copies of an application on FCC Form 302-AM for direct measurement of power. There is no filing fee associated with this application.

Should there be any questions concerning this application, please contact the undersigned.

Sincerely,

Gregory L. Masters

Accepted / Filed

JAN – 2 2019

Federal Communications Commission
Office of the Secretary

Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
Expires 01/31/98

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.

FOR COMMISSION USE ONLY
FILE NO. BZ-20190102AJC

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)

SALEM COMMUNICATIONS HOLDING CORPORATION

MAILING ADDRESS (Line 1) (Maximum 35 characters)
4880 SANTA ROSA ROAD

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
CAMARILLO	CA	93012

TELEPHONE NUMBER (Include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
(805)987-0400	WSPZ	8681

2. A. Is a fee submitted with this application? ☐ Yes ☑ No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section

☐ Governmental Entity ☐ Noncommercial educational licensee ☑ Other (Please explain): Non-feeable application

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
	0001	$	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	FOR FCC USE ONLY
	0001	$	

ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
	$	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT SALEM COMMUNICATIONS HOLDING CORPORATION		
MAILING ADDRESS 4880 SANTA ROSA ROAD		
CITY CAMARILLO	STATE CA	ZIP CODE 93012

2. This application is for:

☑ Commercial ☐ Noncommercial

☑ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
WSPZ	Washington, DC	N/A	N/A	N/A

3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☐ Yes ☐ No

If No, explain in an Exhibit. Not applicable - Direct Measurement application

Exhibit No.

4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met? Not applicable - Direct Measurement application

☐ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect?

☐ Yes ☐ No

If Yes, explain in an Exhibit. Not applicable - Direct Measurement application

Exhibit No.

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☐ Yes ☐ No

☑ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☑ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No.

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☑ Yes ☐ No

2. I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name	Signature	
CHRISTOPHER J. HENDERSON		
Title	Date	Telephone Number
EXECUTIVE VICE PRESIDENT & SECRETARY	12/31/2018	(805)987-0400

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

Consulting Engineers
CTJC
CARL T. JONES CORPORATION

ENGINEERING EXHIBIT
IN SUPPORT OF AN APPLICATION
FOR DIRECT MEASUREMENT OF POWER
STATION WSPZ – WASHINGTON, DC
1260 kHz – 35 kW-D, 5 kW-N, U, DA-2
FACILITY ID: 8681

Applicant: Salem Communications Holding Corporation

December, 2018

7901 Yarnwood Court
Springfield, VA 22153-2899

tel: (703) 569-7704
fax: (703) 569-6417

email: info@ctjc.com
www.ctjc.com

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SECTION III OF FCC FORM 302-AM

ENGINEERING STATEMENT OF JAMES D. SADLER

FIGURE

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant: Salem Communications Holding Corporation

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

☐ Station License ☑ Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
WSPZ		1260	Unlimited	5.0	35.0

2. Station location

State	City or Town
District of Columbia	Washington

3. Transmitter location

State	County	City or Town	Street address (or other identification)
MD	Montgomery	Silver Spring	8744 Brookville Rd.

4. Main studio location

State	County	City or Town	Street address (or other identification)
VA	Arlington	Arlington	1735 N. Lynn St.

5. Remote control point location (specify only if authorized directional antenna)

State	County	City or Town	Street address (or other identification)
VA	Arlington	Arlington	1735 N. Lynn St.

6. Has type-approved stereo generating equipment been installed? ☐ Yes ☑ No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? ☑ Yes ☐ No ☐ Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No. On File

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
10.39	27.15

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50.0	50.0	-j8.8	-j8.8

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1 (C)	0.0	———	1.000	———	———	———
2 (NW)	+172.0	0.0	0.530	1.000	———	———
3 (SE)	-105.5	-168.3	0.265	0.635	———	———

Manufacturer and type of antenna monitor: Potomac Instruments, Model 1901-3

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator #1 - skirted, guyed tower #2&3 - tapered, self-supporting	Overall height in meters of radiator above base insulator, or above base, if grounded. #1 effective height 59.4 #2&3 59.4	Overall height in meters above ground (without obstruction lighting) #1 227.5 #2&3 61.0	Overall height in meters above ground (include obstruction lighting) #1 229.9 #2&3 61.0	If antenna is either top loaded or sectionalized, describe fully in an Exhibit. Exhibit No. N/A

Excitation ☑ Series (#2&3) ☑ Shunt (#1)

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	38 °	59 '	59 "	West Longitude	77 °	03 '	27 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No. On File

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No. On File

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

N/A

11. Give reasons for the change in antenna or common point resistance.

N/A

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
James D. Sadler	
Address (include ZIP Code) Carl T. Jones Corporation 7901 Yarnwood Court Springfield, VA 22153	Date December 28, 2018 Telephone No. (Include Area Code) (703) 569-7704

☐ Technical Director

☐ Registered Professional Engineer

☐ Chief Operator

☑ Technical Consultant

☐ Other (specify)

Consulting Engineers
CTJC
CARL T. JONES CORPORATION

STATEMENT OF JAMES D. SADLER
IN SUPPORT OF AN APPLICATION
FOR DIRECT MEASUREMENT OF POWER
STATION WSPZ - WASHINGTON, DC
1260 kHz – 35 kW-D, 5 kW-N, U, DA-2
FACILITY ID: 8681

Applicant: Salem Communications Holding Corporation

I am a Technical Consultant, an employee in the firm of Carl T. Jones Corporation with offices located in Springfield, VA. My education and experience are a matter of record with the Federal Communications Commission.

Introduction

Radio Station WSPZ(AM), Washington, DC, is licensed to operate on a frequency of 1260 kHz, on an unlimited time basis, with a daytime power of 35 kW and a nighttime power of 5 kW. The station utilizes different directional patterns for its daytime and nighttime operations (DA-2).

In November, 2018, Verizon completed the installation of new cellular antennas and associated feed lines on the center tower of the WSPZ nighttime directional array. The location of the Verizon antennas on the center tower corresponds to the height at which the lowest of three detuning skirt wire systems is located. Prior to the equipment installation effort, Verizon coordinated with the tower owner and the WSPZ licensee and

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a plan was developed that was agreed to by all parties. Particular care was taken in the installation of the new antennas and associated feed lines due to the complexity of the detuning systems located on the tower and the potential to alter one or both of the WSPZ directional patterns. Prior to the installation of the new antennas, partial proof of performance measurements were performed on the non-directional and nighttime directional patterns and non-directional impedance measurements were performed at the base of the center tower. Because the center tower is not employed in the daytime directional antenna system and past experience with these kinds of changes has shown they have little effect on the daytime directional antenna system partial proof of performance measurements were not performed on the daytime directional pattern prior to the installation of the new antennas.

After completion of the Verizon equipment installation, it was observed that the WSPZ nighttime parameters had changed, and that the non-directional impedance of the center tower had changed as well. A minor adjustment of the detuning impedance for the lower detuning skirt restored the non-directional base impedance to a value very close to the measured impedance before the replacement of the existing antennas. This adjustment also restored the nighttime directional antenna monitor parameters to values which were closer to the licensed values.

The daytime directional antenna monitor parameters were unaffected by the changes and measurement of the two daytime directional monitor points showed that the daytime pattern exhibited no significant adverse impact as a result of the

installation.[1] Partial proof measurements performed on the non-directional and nighttime directional patterns showed that the nighttime pattern had been adversely impacted by the Verizon equipment installation. Specifically, the inverse distance fields in the null directions of the nighttime pattern (52 degree and 280 degree bearings) were increased to levels above the modified standard pattern value. Based on this finding, Salem Communications Holding Corporation, licensee of Station WSPZ, authorized this office to: perform minor adjustment of the nighttime directional pattern; perform non-directional and nighttime directional partial proof field strength measurements; and prepare this engineering statement, Section III of FCC Form 302-AM and the associated figures in support of an Application for Direct Measurement of Power.

Non-directional and Nighttime Directional Partial Proof of Performance Field Strength Measurements

The post construction field strength measurements on the 52 and 280 degree nighttime monitored radials indicated that the inverse distance fields on these radials were above the modified standard pattern values and; therefore, minor adjustment of the nighttime pattern was performed, by the undersigned, to bring the radiated values into compliance. The non-directional antenna impedance of Tower #1 (center) was measured, by the undersigned, using a Delta Electronics, Model OIB-1, operating impedance bridge. The measurement was performed at the J-Plug located in the output branch of the tower #1 ATU network with Towers #2 and #3 detuned. The measured

[1] The daytime antenna system utilizes only the two end towers of the three tower array and therefore, the Verizon modifications on the center tower would not be expected to significantly impact the daytime pattern. No changes are requested with respect to the daytime pattern.

non-directional base impedance of Tower #1 was determined to be, $Z_{ND\#1}$ = 136.0 +j 8.8 Ohms. The transmitter was adjusted for a non-directional base current of 6.78 Amperes corresponding to a non-directional antenna input power of approximately 6,250 Watts. The nighttime common point impedance was adjusted for Z_{cp} = 50.0 -j 8.8 Ohms and the transmitter was adjusted for a common point current of 10.39 Amperes.

Non-directional and nighttime directional partial proof field strength measurements were then performed on all four nighttime monitored radials. The non-directional measurements were performed on December 15 and 19, 2018, and the nighttime directional measurements were all performed on December 19, 2018. A minimum of eight field strength measurements were performed on each radial bearing at the same locations that were measured in the 2012 nighttime full proof-of-performance, including the monitor point locations, at distances generally between 3 kilometers and 15 kilometers from the transmitter site. All measurements were made during the period between two hours following local sunrise and two hours prior to local sunset to minimize the potential for skywave interference.

All of the field strength measurements were performed by Mr. Tom Ringer and Mr. Ben Milton, contract engineers working for Carl T. Jones Corporation, Mr. Dan Cavegn, a senior field technician with Carl T. Jones Corporation, and the undersigned. Each of these individuals is experienced in performing field strength measurements on AM directional patterns.

A total of three field intensity meters were used to make the measurements. Pertinent information on each field intensity meter is contained in the following Table.

Manufacturer/Model	Serial Number	Calibration Date
Potomac Instruments/FIM-41	446	October, 2009
Potomac Instruments/FIM-41	989	March, 2012
Potomac Instruments/FIM-41	2008	February, 2012

The performance of the three field intensity meters was verified by comparing measured field strength values at several different full scale settings and verifying that the field strength values, as measured on each meter, agreed within the manufactures stated accuracy. In addition, the performance of one of the meters was recently compared to another recently calibrated meter and agreed within the manufactures stated accuracy.

The measured 2018 non-directional and nighttime directional field strengths are tabulated in Figure 2. For each measurement location, the 2018 nighttime directional field strength was compared to the 2018 non-directional field strength. An arithmetic and logarithmic ratio was calculated for each location and the average ratio calculated for each radial bearing. The antilogarithm of the averages were multiplied by the measured non-directional inverse distance fields contained in the 2012 Proof to yield the 2018 nighttime directional inverse distance field values.

A comparative summary of the 2018 nighttime measured field strength data and the modified standard pattern radiation for the four measured radials is contained herein as Figure 1. In no case does the 2018 nighttime inverse distance field exceed the authorized modified standard pattern value.

Monitor Point Values and Locations

Analysis of the nighttime partial proof field strength measurements indicates that the field strength associated with the 280 degree monitor point should be increased to the value shown in Figure 3. No changes in the maximum field strength values of the other three nighttime monitor points are warranted. No change to the monitoring point locations or descriptions is necessary. Data pertinent to the determination of the maximum field strength value at each nighttime monitor point location is contained in Figure 3.

Summary

It is submitted that the daytime and nighttime directional patterns of Station WSPZ(AM) are in proper adjustment and compliant with the station's authorization. Further, it is requested that a superseding license be issued to reflect the changes in the nighttime operating parameters and modification of the monitoring point data referenced herein.

This engineering statement, FCC Form 302-AM, Section III, and the associated figures were prepared by me or under my direct supervision and the information therein is believed to be true and correct.

Dated: December 28, 2018

James D. Sadler

Figure 1

SUMMARY OF NIGHTTIME MEASURED FIELD STRENGTH DATA
STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

Monitored Radial (deg. T.)	2012 ND Inverse Distance Field Strength (mV/m at 1 km)	DA-N / ND Antilog of Average Ratio	DA-N Measured Inverse Distance Field Strength (mV/m at 1 km)	Nighttime Modified Standard Pattern Radiation (mV/m at 1 km)
52	725	0.0657	47.7	60.0
198	760	1.0436	793	877
280	800	0.0523	41.8	61.2
325	790	0.4263	337	368

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

52 Degrees True Radial

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND			5 kW, DA-NIGHT				
		Date	Time (local)	Field Strength (mV/m)	Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
11	3.41	12/15/2018	1132	96.0	12/19/2018	915	7.6	0.0792	-1.1015
12	4.22	12/15/2018	1136	56.0	12/19/2018	922	4.6	0.0821	-1.0854
13 MP	5.58	12/15/2018	1146	29.0	12/19/2018	930	1.8	0.0621	-1.2071
14	6.48	12/15/2018	1151	22.4	12/19/2018	938	1.4	0.0625	-1.2041
15	7.31	12/15/2018	1156	17.2	12/19/2018	944	1.35	0.0785	-1.1052
16	8.02	12/15/2018	1201	26.0	12/19/2018	952	1.6	0.0615	-1.2109
17	8.24	12/15/2018	1203	15.9	12/19/2018	957	0.38	0.0239	-1.6216
18	9.69	12/15/2018	1209	11.6	12/19/2018	1002	0.68	0.0586	-1.2319
19	11.20	12/15/2018	1215	8.90	12/19/2018	1015	0.4	0.0449	-1.3473
20	12.90	12/15/2018	1223	6.00	12/19/2018	1022	0.47	0.0783	-1.1061
21	14.00	12/15/2018	1230	5.40	12/19/2018	1029	0.39	0.0722	-1.1413
22	15.40	12/15/2018	1238	2.80	12/19/2018	1034	0.42	0.1500	-0.8239
							Average Ratio	0.0712	-1.1822
							Antilog of Average		0.0657

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

198 Degrees True Radial

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND Date	Time (local)	Field Strength (mV/m)	5 kW, DA-NIGHT Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
14	2.38	12/15/2018	950	140	12/19/2018	1244	112	0.8000	-0.0969
15	2.87	12/15/2018	956	120	12/19/2018	1238	134	1.1167	0.0479
16	3.34	12/15/2018	1002	99	12/19/2018	1232	114	1.1515	0.0613
17	3.77	12/15/2018	1008	50	12/19/2018	1227	66	1.3200	0.1206
18	4.41	12/15/2018	1012	84	12/19/2018	1253	93	1.1071	0.0442
19	4.91	12/15/2018	1021	52	12/19/2018	1301	42	0.8077	-0.0928
20 MP	5.31	12/15/2018	1028	70	12/19/2018	1311	61	0.8714	-0.0598
21	6.63	12/15/2018	1043	31.5	12/19/2018	1323	36.5	1.1587	0.0640
22	7.94	12/15/2018	1054	21	12/19/2018	1329	17.5	0.8333	-0.0792
23	9.75	12/15/2018	1106	5	12/19/2018	1336	7.5	1.5000	0.1761
							Average Ratio	1.0667	0.0185
							Antilog of Average		1.0436

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

280 Degrees True Radial

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND			5 kW, DA-NIGHT				
		Date	Time (local)	Field Strength (mV/m)	Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
10	3.82	12/19/2018	1048	73	12/19/2018	915	9.1	0.1247	-0.9043
11 MP	4.38	12/19/2018	1051	39.9	12/19/2018	921	3.9	0.0977	-1.0099
12	5.02	12/19/2018	1057	43	12/19/2018	928	4.1	0.0953	-1.0207
13	5.76	12/19/2018	1107	19.8	12/19/2018	932	2.09	0.1056	-0.9765
14	6.81	12/19/2018	1109	22.9	12/19/2018	938	1.63	0.0712	-1.1476
15	7.77	12/19/2018	1121	17.8	12/19/2018	921	0.8	0.0449	-1.3473
16	9.34	12/19/2018	1049	10	12/19/2018	933	0.19	0.0190	-1.7212
17	10.70	12/19/2018	1056	6.8	12/19/2018	946	0.45	0.0662	-1.1793
18	12.00	12/19/2018	1102	4.8	12/19/2018	954	0.085	0.0177	-1.7518
19	13.10	12/19/2018	1108	5.1	12/19/2018	1002	0.105	0.0206	-1.6864
20	14.50	12/19/2018	1116	4.5	12/19/2018	1010	0.2	0.0444	-1.3522
							Average Ratio	0.0643	-1.2816
							Antilog of Average		0.0523

TABULATION OF FIELD STRENGTH MEASUREMENT DATA
STATION WSPZ, WASHINGTON, DC
1260 kHz, 35 kW-D, 5 kW-N, DA-2

325 Degrees True Radial

2012 Proof Point Number	Distance (kilometers)	6.25 kW, ND			5 kW, DA-NIGHT				
		Date	Time (local)	Field Strength (mV/m)	Date	Time (local)	Field Strength (mV/m)	Ratio (DA-N/ND)	Log Ratio (DA-N/ND)
10 MP	2.57	12/15/2018	948	106	12/19/2018	1300	46	0.4340	-0.3625
11	3.75	12/15/2018	956	52	12/19/2018	1308	20.3	0.3904	-0.4085
12	4.24	12/15/2018	959	53	12/19/2018	1311	21.6	0.4075	-0.3898
13	5.09	12/15/2018	1004	24.3	12/19/2018	1315	11.6	0.4774	-0.3211
14	5.47	12/15/2018	1009	28.4	12/19/2018	1318	11.3	0.3979	-0.4002
15	6.29	12/15/2018	1014	25	12/19/2018	1324	10.9	0.4360	-0.3605
16	7.83	12/15/2018	1021	14.3	12/19/2018	1333	6.6	0.4615	-0.3358
17	8.90	12/15/2018	1026	15	12/19/2018	1340	6.7	0.4467	-0.3500
18	9.55	12/15/2018	1031	11.2	12/19/2018	1413	4.85	0.4330	-0.3635
19	9.83	12/15/2018	1036	10.3	12/19/2018	1417	4.4	0.4272	-0.3694
20	11.30	12/15/2018	1042	7	12/19/2018	1420	2.65	0.3786	-0.4219
21	11.64	12/15/2018	1047	4.4	12/19/2018	1424	1.92	0.4364	-0.3602
							Average Ratio	0.4272	-0.3703
							Antilog of Average		0.4263